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Original research article

Clinical profile of patients with essential hypertension attending tertiary care hospital

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Abstract

Hypertension also results in microvascular disease, and this can lead to local tissue ischemia. In addition to the release of lactate that blocks rate secretion in the proximal tubule, ischemia also results in increased uric acid synthesis. A clinical proforma (questionnaire) was prepared which included present history, past history, Personal history including history of smoking and alcohol and family history of cardiovascular and renal diseases. In the present study 61.6% (37/60) showed a blood pressure of systolic 140-160 or diastolic 90-100 mm hg. 23.3% (14/60) showed blood pressure Systolic > 160 or diastolic > 100 mm hg. 15% (09/60) showed blood pressure systolic < 140 and diastolic < 90 mm hg.

Keywords: Hypertension, smoking, uric acid

Introduction

Hypertension is the most common risk factor for cardiovascular disease in the general population. The first hypothesis of an association between hypertension and UA dates back to the 1870s, owing to the observation that hypertension was common finding in the gouty patients, whilst a large fraction of hypertensive population was effected by hyperurecemia [1].

Uric acid is also commonly associated with hypertension. It is present in 25% of untreated hypertensive subjects, in 50% of subjects taking diuretics, and in > 75% of subjects with malignant hypertension.

Jhonson *et al*. demonstrated a blood pressure elevation within 3 weeks from the beginning of hyperurecemia diet in rats and observed an association between increased UA levels and development of tubule-interstitial injuries [2].

These renal abnormalities can be explained as the consequences of a urate induced NO deficiency combined with strong activation of rennin-angiotensin system and can be prevented with use of angiotension II receptoe blockers. Interestingly, Both renal lesions and blood presuure abnormalities can be prevented only by reducing early hyperurecemia while no benefit has been observed in animals with chronic urate disorders when cardio-renal damage is mainly due to other mechanisms (e.g., Salt sensitivity and established arterial stiffness) [3].

In humans the first reliable demonstration of a linking between serum uric acid and onset of high Blood pressure has been published in teh early 1990s.

These preliminary results have been confirmed more recently and, in particular, the study of Krishnan *et al*. has demonstrated that the linear relationship between blood pressure and UA is still significant after a full adjustment for several confounders and after exclusion of patients with impaired glucose tolerance, diabetes and metabolic syndrome, The increase in serum uric acid in hypertension may be due to the decrease in renal blood flow that accompanies the hypertensive state, since a low renal blood flow will stimulate urate reabsorption [4].

Hypertension also results in microvascular disease, and this can lead to local tissue ischemia. In addition to the release of lactate that blocks urate secretion in the proximal tubule, ischemia also results in increased uric acid synthesis.

Methodology

- The study was approved by the Institutional Ethics Committee.
- Written informed consent was obtained from the all the cases included in the study.
- Sample size: 60 cases.

Calculated using the formula

$N=Z^2 \times P(1-P)/d^2$

Where

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N is the sample size.
Z is the statistic corresponding to level of confidence.
P is the expected prevalence and d, the precision.

- **Type of study:** Hospital based prospective observational study.
- **Duration of study:** Period of 3 years. i.e. from 31st October, 2018 to 31st April, 2020.

Inclusion Criteria

1. Patients who are willing to participate in the study.
2. Age between 18 to 61 years.
3. Newly diagnosed essential hypertension patients.

Exclusion Criteria

1. Patients who are unwilling to participate in the study.
2. Patients older than 61 years.
3. Hypertension duration > 6 months.
4. Diabetes mellitus.
5. Cardiac failure.
6. Chronic kidney disease.
7. Patients on diuretics, ACE inhibitors, ARBs.
8. Secondary hypertension.

Methodology

- In the Present study we included 60 hypertensive cases with BP > 140/90 mm Hg.
- Cases were selected randomly.
- A clinical proforma (questionnaire) was prepared which included present history, past history, Personal history including history of smoking and alcohol and family history of cardiovascular and renal diseases.
- General and systemic examination was done.
- Hypertension was defined as a condition when subjects are on current antihypertensive medication or on systolic blood pressure of ≥140 mm Hg or diastolic blood pressure of ≥90

Results

Table 1: Age Distribution in Years

Age in years	No. of cases	Percentage
18-28 years	07	11.6
29-39 years	18	30
40-50 years	29	48.3
51-61 years	06	10
Total	60	99.9%

To evaluate the relationship between serum uric acid and BP in different ages, we divided the subjects into three groups by age; i.e., 18-28, 29-39 years, 40-50 years, and 51-61 years.
In the present study the age distribution range from 18 -61 years, with a mean age of 41.77 years. Majority of cases were among 40-50 years age group i.e., 48.3% (29/60), followed by 30% (18/60) among 29-39 years, and 11.6% (07/60) among 18-28 years, least reported among 51-60 years i.e., 10% (06/60).

Table 2: Gender Distribution

Sex Distribution	No. of cases	Percentage
Males	38	63.3
Females	22	36.6
Total	60	99.9%

- In the present study males were predominant i.e., 63.3% (38/60) compared to females i.e., 36.6% (22/60).

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Table 3: Age-Sex Distribution

Age in years	Males	Females	Percentage
18-28 years	05	02	07 (11.6%)
29-39 years	11	07	18(30%)
40-50 years	18	11	29 (48.3%)
51-61 years	04	02	06(10%)
Total	38 (63.3%)	22 (36.6%)	60(99.9%)

Table 4: Menopausal Status

Menopausal Status	No. of Cases	Percentage
Attained	03	13.6
Not attained	19	86.3
Total	22	99.9%

- In the present study among 22 females only 13.6% (03/22) attained menopausal status.

Table 5: Family History of Vascular Events

Family history	No. of cases	Percentage
Present	53	88.3
Absent	07	11.6
Total	60	99.9%

- In the present study 88.3% (53/60) of cases have a family history of vascular events. 11.6% (07/60) were with no family history of vascular events.

Table 6: Personal Habits

Personal Habits	No. of Cases	Percentage
Only Smoking	12	20
Only alcohol	13	21.6
Smoking + alcohol	21	35
Absent	14	23.3
Total	60	99.9%

- In the present study 35% (21/60) have a history of both smoking & alcohol. 20% (12/60) Cases have history of smoking. 21.6% (13/60) cases have history of alcohol. 23.3% (14/60) cases with absence of history of both smoking & alcohol.

Table 7: Distribution of Blood Pressure

	Parameter	No. of cases	Percentage
1.	Systolic < 140 and diastolic < 90	09	15
2.	Systolic 140-160 or diastolic 90-100	36	60
3.	Systolic > 160 or diastolic > 100	15	25
Total	Total	60	99.9%

- In the present study 61.6% (37/60) showed a blood pressure of systolic 140-160 or diastolic 90-100 mm hg. 23.3% (14/60) showed a blood pressure Systolic > 160 or diastolic > 100 mm hg. 15% (09/60) showed a blood pressure systolic < 140 and diastolic < 90 mm hg.

Table 8: Body Mass Index Distribution

Body Mass Index distribution (15-35)	No. of cases	Percentage
BMI 25-30-overweight	05	33.3
BMI > 30-obesity	10	66.6
Total	15	99.9%

- In the present study 15 subjects showed obesity and overweight. Among 15 cases, 66.6% (10/15) showed BMI > 30-obesity. 33.3% (05/15) showed BMI 25-30 overweight.

Table 9: Raised Serum Uric Acid Distribution

Serum Uric Acid Distribution	No. of cases	Percentage
Present	51	85
Absent	09	15

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Total	60	100%

- 85% (51/60) cases had an elevation of serum uric acid. 15% (09/60) showed normal serum uric acid.

Table 10: Urine Albumin Excretion Status

Urine Albumin Excretion	No. of cases	Percentage
Present	49	81.6
Absent	11	18.3
Total	60	99.9%

In the present study Micro-albuminuria was present in 81.6% (41/60). 18.3% (11/60) showed no urine albumin excretion.

Discussion

Table 11: Comparative Studies Related With Age Distribution

S. No.	Comparative Studies	Mean Age
1.	Abidemi Jude Fasae *et al*. study [5]	50.4±12.3 years
6.	F Viazzi *et al*. study [6]	62 ± 11 years
3.	Xuling Chen *et al*. study [7]	63.9 ± 7.3
2.	Sandra N Ofori *et al*. study [8]	46.8±9.3 years
4.	Kumral Caglı *et al*. study [9]	57.3±13.6 years,
5.	C Tsioufis, *et al*. study [10]	53.4 years
	Present study	41.77 years

In the Present study age range of 18-60 years and a mean age of 41.7 ±12.3 year which was comparable to the above studies. In s study conducted by Sandra N Ofori *et al*. the age range was 31-70 years, with a mean age 46.8±9.3 years. The findings were in corrobation with the above study. Where as in a study conducted by Abidemi Jude Fasae *et al*. age range of 19-85 years and a mean age of 50.4±12.3 years. F Viazzi *et al*. study observed mean age 62 ± 11 years in their study. In the Xuling Chen *et al*. study mean age of the population was 63.9 ± 7.3 years. In the Kumral Caglı, MD *et al*. study the mean age of the population was 57.3 years, In the C Tsioufis, *et al*. study where in the pooled study population mean age was 53.4 years.

Table 12: Comparative Studies Related with Gender Distribution

Sex Distribution	Males	Females	Total
Abidemi Jude Fasae *et al*. study [5]	34.7%(52)	65.3% (98)	150 (0.5:1)
Sandra N Ofori *et al*. Study [8]	33.8%(44)	66.1% (86)	130 (1:1.9)
Kumral Caglı *et al*. Study [9]	59% (178)	40.6% (122)	300 (1.4:1)
C Tsioufis, *et al*. Study [10]	48.3% (1063)	51.6 (1134)	2197 (0.9:1)
Present study	68.1% (38)	31.8% (22)	60 (1.7:1)

- In the Present study males were predominantly involved i.e., about 68.1% (38/60) and females about 31.8% (22/60) with male-to-female ratio is 1.7:1. Where as in Abidemi Jude Fasae *et al*. 34.7% of the 150 newly diagnosed hypertensive patients were males while 65.3% were females with male-to-female ratio was 0.5:1. In Sandra N Ofori *et al*. study 66.1% were males and 33.8% were females with male-to-female ratio was 1:1.9. In Kumral Caglı, MD *et al*. study 59% male and 40.6% females were included in the study with male-to-female ratio was 1.4:1. In CTsioufis, *et al*. study 48.3% males and 51.6% were females with male-to-female ratio was 0.9:1.
- Hence our study was correlating with other studies.

Table 13: Comparative Studies Related with Smoking

Comparative Studies	History of Smoking	p Value
Kumral Caglı *et al*. Study [9]	23.3%	0.43
C Tsioufis *et al*. Study [10]	31.1%	NS
Present study	20%	p = 0.63 (NS)

- In the present study 20% cases have history of smoking with p value 0.63 as not significant. In a study done by C Tsioufis, *et al*. 31.1% of the participants were smokers with p value as not significant. In by Kumral Caglı *et al*. study 23.3% had history of smoking with p value 0.43.

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Table 14: Comparative Studies Related with Blood Pressure

Related with Blood Pressure	Mean SBP	Mean DBP	P Value
Abidemi Jude Fasae *et al*. study [5]	175±24.0mmHg	106±16.4mmHg	SBP-p<0.0001 DBP- p<0.0001
Sandra N Ofori *et al*. study [8]	158.8±15.9 mmHg	95.9±11.1	SBP-<0.001 DBP-<0.001
Kumral Caglı *et al*. study [9]	159.0 (148.0-174.0) mmHg	99.0 (90.3-113.0) mmHg	SBP-0.03 DBP-0.03
C Tsioufis *et al*. study [10]	150 ±19.31 mmHg	97 ± 11.56 mmHg	SBP-NS DBP-0.02
Present study	158.25 mmHg	95 mmHg	SBP-p-0.000 DBP-p-0.000

- In the present study mean SBP was 158.25 mmHg and mean DBP was 95 mmHg respectively; There is a statistically significant difference in mean uric acid levels. In Abidemi Jude Fasae *et al*. study mean SBP and DBP of the hypertensive patients are 175±24.0 mmHg and 106±16.4mmHg respectively; In Sandra N Ofori *et al*. study mean SBP and DBP of the hypertensive patients are 158.8±15.9 mmHg and 95.9±11.1 mmHg respectively. In Kumral Caglı, MD *et al*. study mean SBP and DBP of the hypertensive patients are 159.0 mmHg and 99.0 mmHg respectively; In CTsioufis, *et al*. study mean SBP and DBP of the hypertensive patients are 150 ±19.31mmHg and 97 ± 11.56 mmHg respectively;

Conclusion

- In the present study 61.6 % (37/60) showed a blood pressure of systolic 140-160 or diastolic 90-100 mm hg. 23.3% (14/60) showed blood pressure Systolic > 160 or diastolic > 100 mm hg. 15% (09/60) shown blood pressure systolic < 140 and diastolic < 90 mm hg.
- 85% (51/60) cases had an elevation of serum uric acid. 15% (09/60) showed normal serum uric acid.
- In the present study Microalbuminuria was present in 81.6% (41/60). 18.3% (11/60) showed no urine albumin excretion.

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